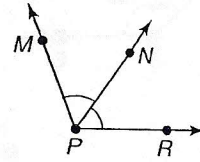


1-4*(day 3)***Angle Measure**

Congruent Angles Angles that have the same measure are **congruent angles**. A ray that divides an angle into two congruent angles is called an **angle bisector**. In the figure, \overrightarrow{PN} is the angle bisector of $\angle MPR$. Point N lies in the interior of $\angle MPR$ and $\angle MPN \cong \angle NPR$.

**Example**

Refer to the figure above. If $m\angle MPN = 2x + 14$ and $m\angle NPR = x + 34$, find x and find $m\angle MPR$.

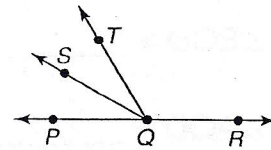
Since \overrightarrow{PN} bisects $\angle MPR$, $\angle MPN \cong \angle NPR$, or $m\angle MPN = m\angle NPR$.

$$\begin{aligned} 2x + 14 &= x + 34 & m\angle NPR &= (2x + 14) + (x + 34) \\ 2x + 14 - x &= x + 34 - x & &= 54 + 34 \\ x + 14 &= 34 & &= 88 \\ x + 14 - 14 &= 34 - 14 & & \\ x &= 20 & & \end{aligned}$$

Exercises

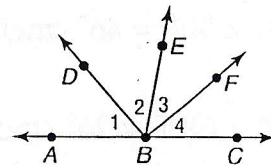
\overrightarrow{QS} bisects $\angle PQT$, and \overrightarrow{QP} and \overrightarrow{QR} are opposite rays.

- If $m\angle PQT = 60$ and $m\angle PQS = 4x + 14$, find the value of x .
- If $m\angle PQS = 3x + 13$ and $m\angle SQT = 6x - 2$, find $m\angle PQT$.

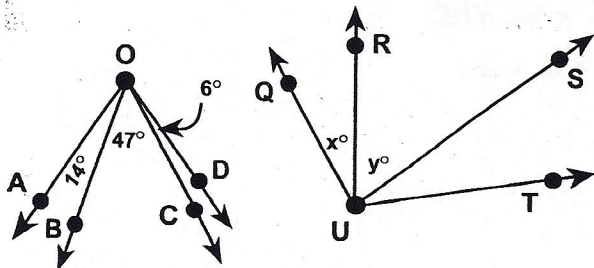
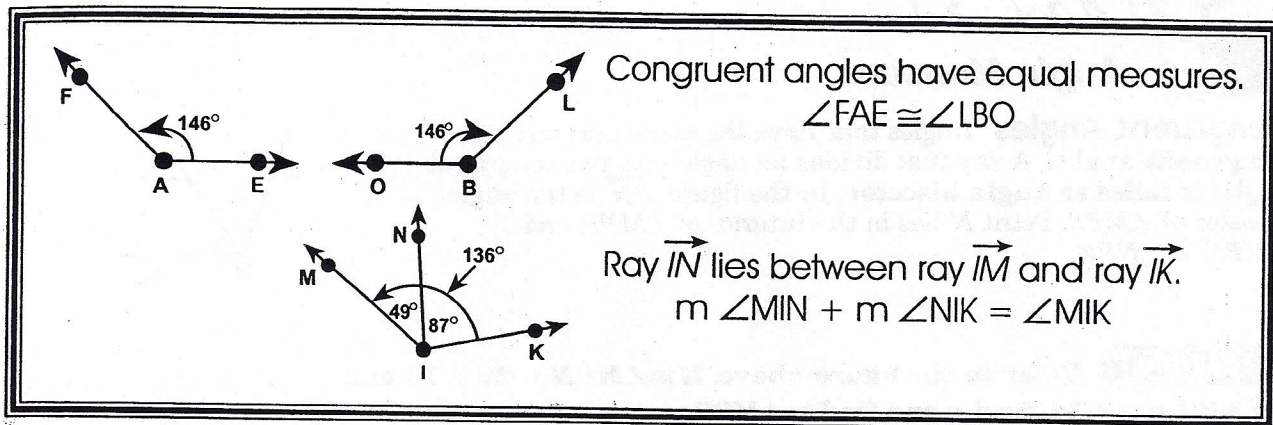


\overrightarrow{BA} and \overrightarrow{BC} are opposite rays, \overrightarrow{BF} bisects $\angle CBE$, and \overrightarrow{BD} bisects $\angle ABE$.

- If $m\angle EBF = 6x + 4$ and $m\angle CBF = 7x - 2$, find $m\angle EBC$.
- If $m\angle 1 = 4x + 10$ and $m\angle 2 = 5x$, find $m\angle 2$.
- If $m\angle 2 = 6y + 2$ and $m\angle 1 = 8y - 14$, find $m\angle ABE$.
- Is $\angle DBF$ a right angle? Explain.



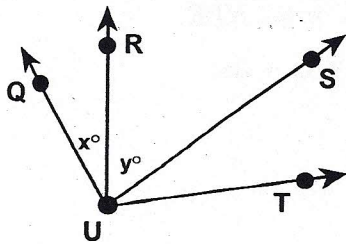
Congruence and Addition Properties of Angles



1. $m\angle AOC =$ _____

2. $m\angle BOD =$ _____

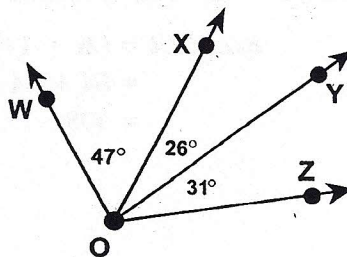
3. $m\angle AOD =$ _____



4. $m\angle QUS = m\angle RUS +$ _____

5. $m\angle QUR + m\angle RUT =$ _____

6. $m\angle SUR + m\angle SUT =$ _____



7. If $m\angle QUS = 72^\circ$ and $y = 46^\circ$, $m\angle RUQ =$ _____

8. If $m\angle SUR = 46^\circ$ and $m\angle SUT = 31^\circ$, $m\angle RUT =$ _____

9. If $m\angle QUR = 26^\circ$ and $m\angle RUT = 77^\circ$, $m\angle QUT =$ _____

10. $m\angle WOX =$ _____

14. $m\angle XOY + m\angle YOZ =$ _____

11. $m\angle XOZ =$ _____

15. $m\angle WOY =$ _____ $+ m\angle XOY$

12. $m\angle WOY =$ _____

16. If $m\angle GAH = 15^\circ$, $m\angle IAJ =$ _____

13. $m\angle WOZ = m\angle WOY +$ _____

17. $m\angle GAJ =$ _____ $+ m\angle IAJ$